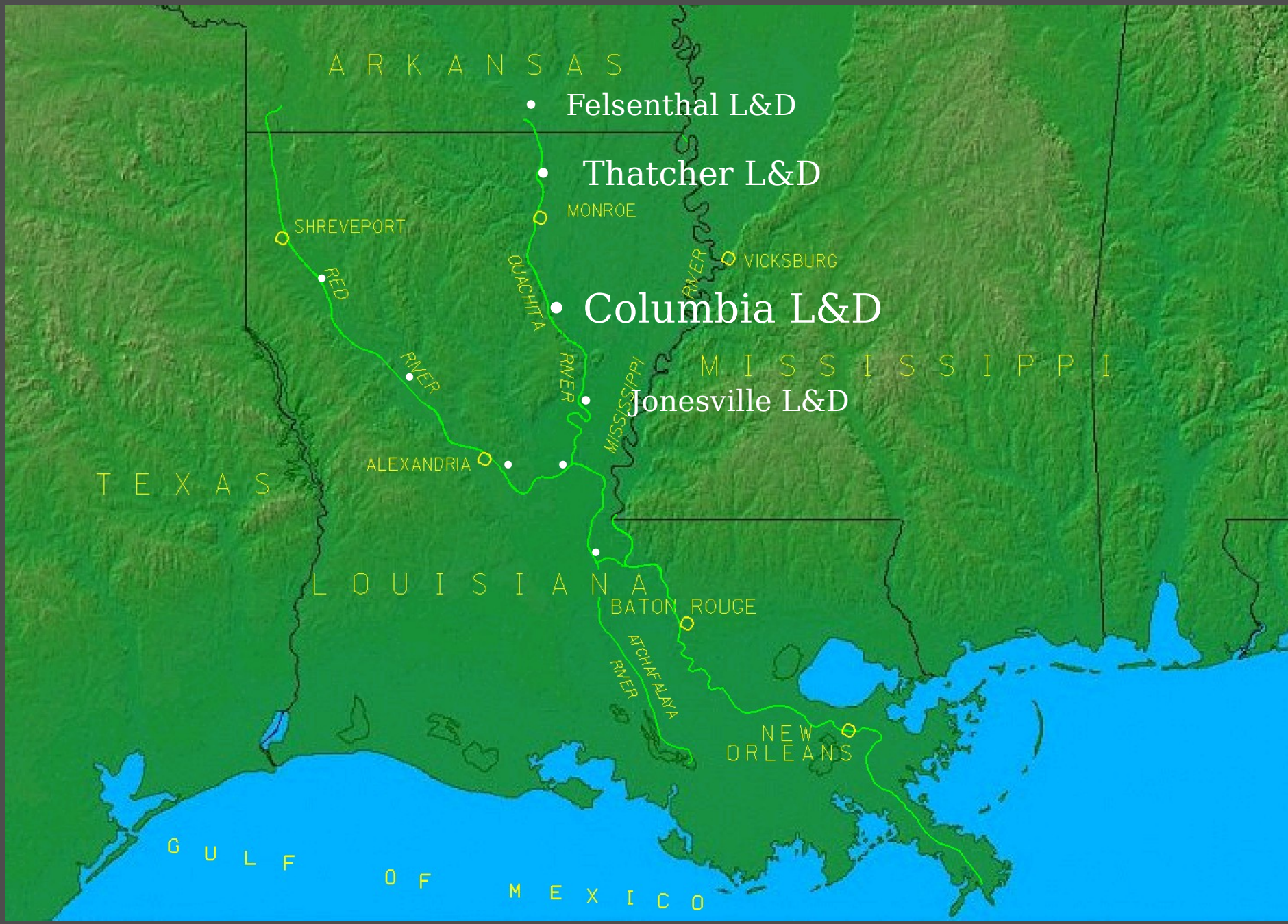
Dam Safety Case History

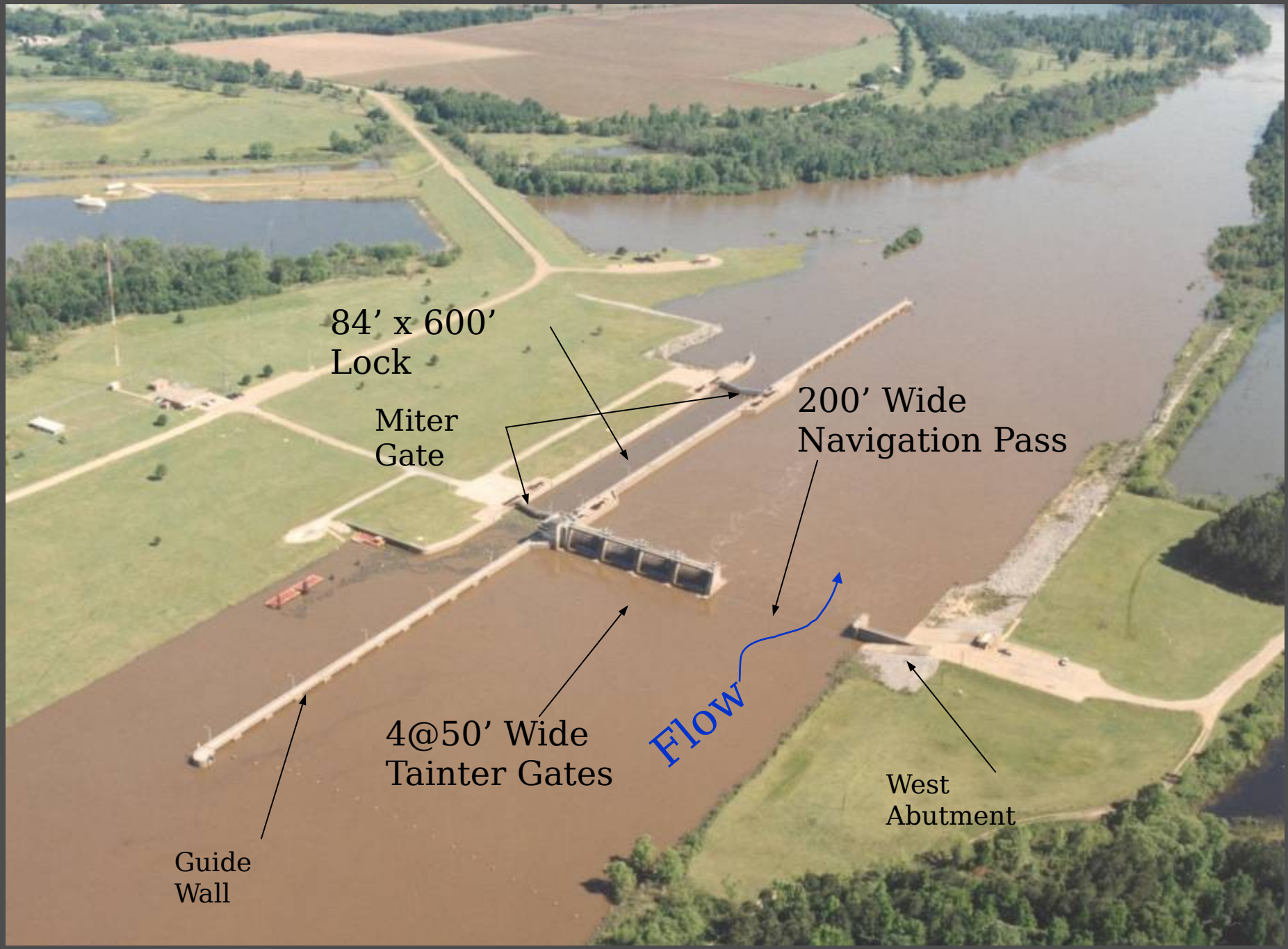
Columbia Lock and Dam

March 8, 1997

"A number of courageous people worked in sometimes dangerous circumstance to perform their missions. We are grateful that throughout all of this no one was injured and we were all successful in our efforts."

CCHamby 97

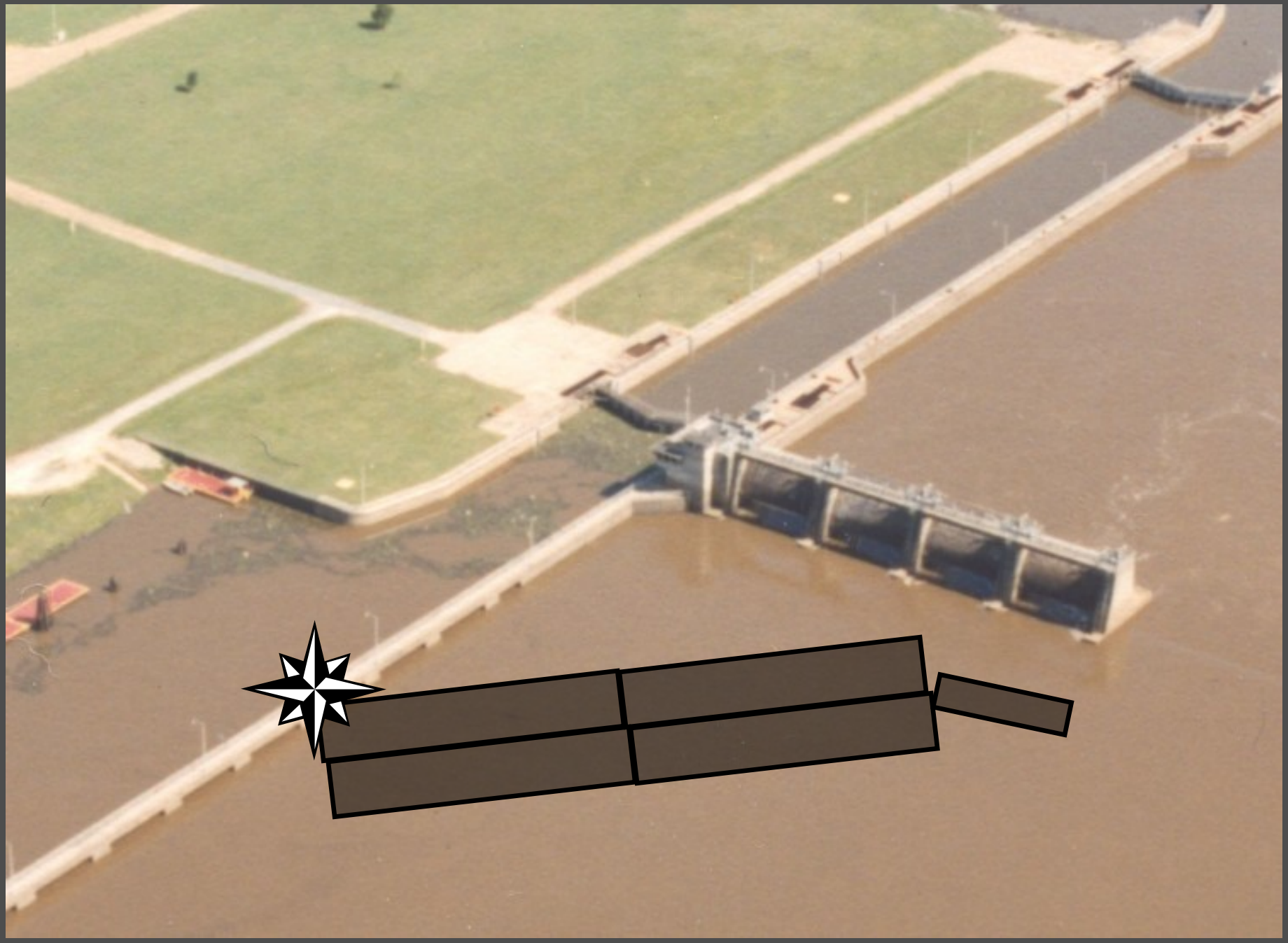

ARKANSAS
Felsenthal L&D
Thatcher L&D
MONROE
SHREVEPORT
OUACHITA RIVER
VICKSBURG
RIVER
RED
Columbia L&D
RIVER
MISSISSIPPI
MISSISSIPPI
Jonesville L&D
ALEXANDRIA
TEXAS
LOUISIANA
BATON ROUGE
ATCHAFALAYA RIVER
NEW ORLEANS
GULF OF MEXICO

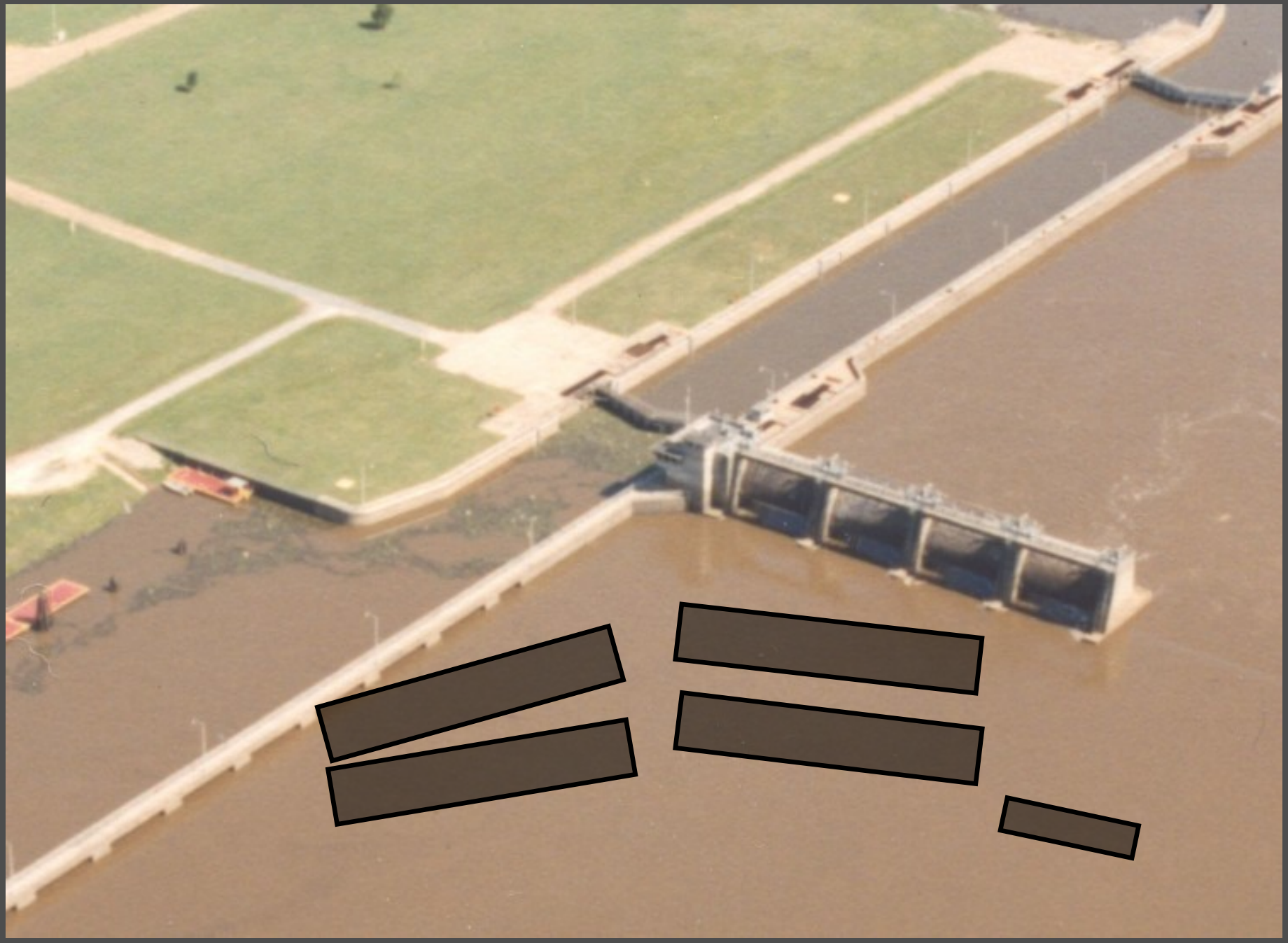

84’ x 600’
Lock
Miter
Gate
200’ Wide
Navigation Pass
4@50’ Wide
Tainter Gates
Flow
West
Abutment
Guide
Wall

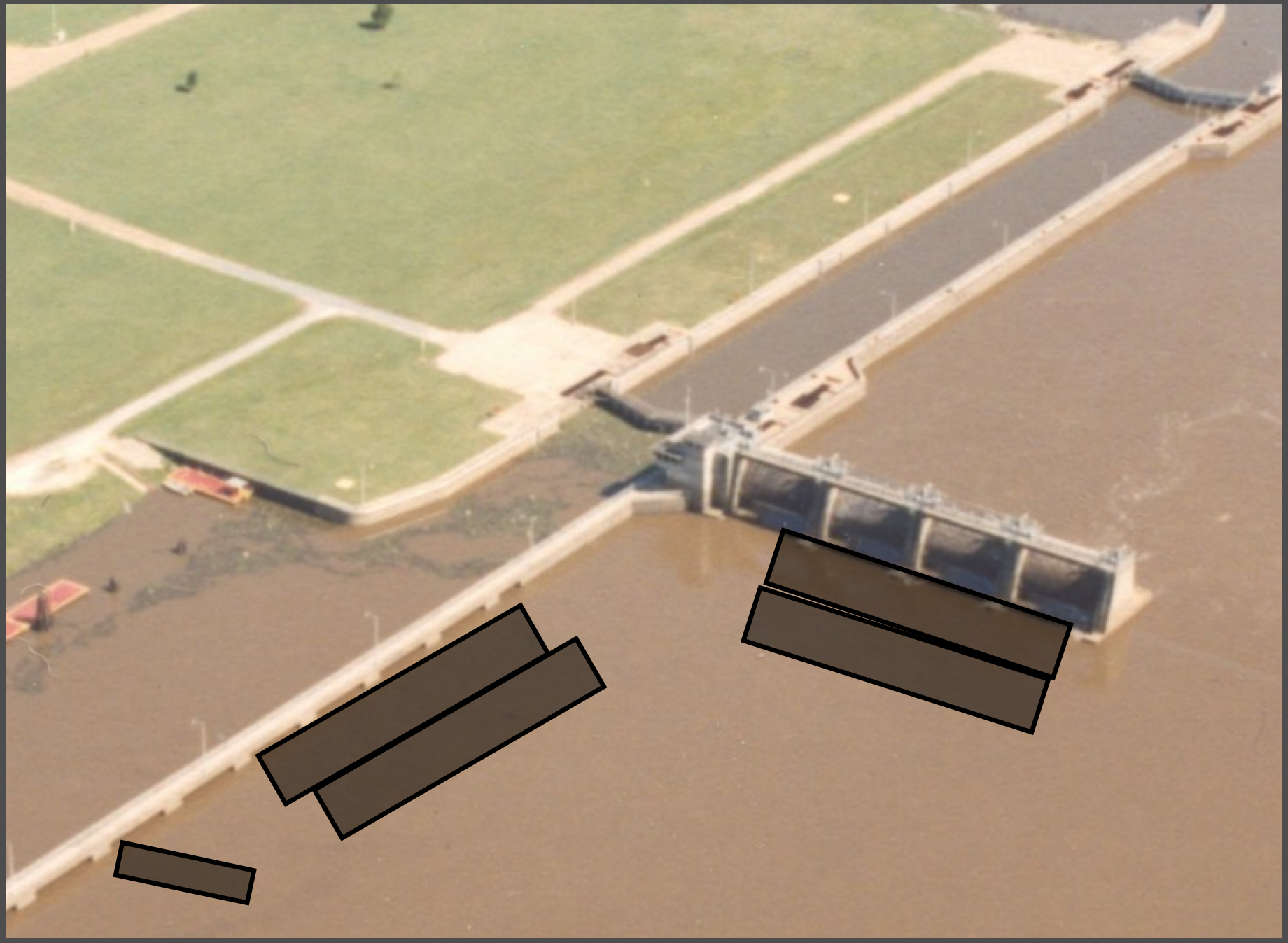
The Accident

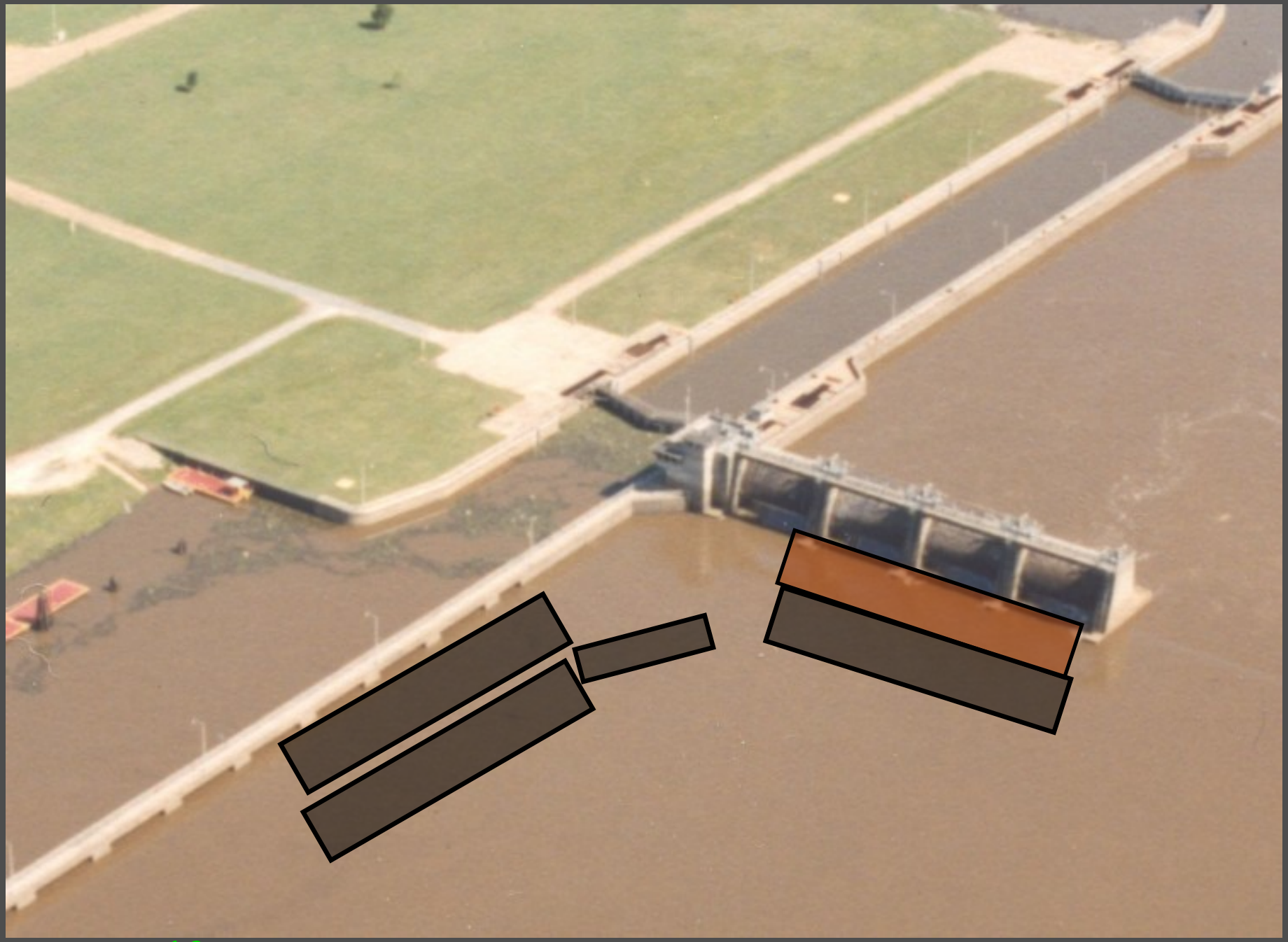
8 March 97

Columbia Lock and Dam

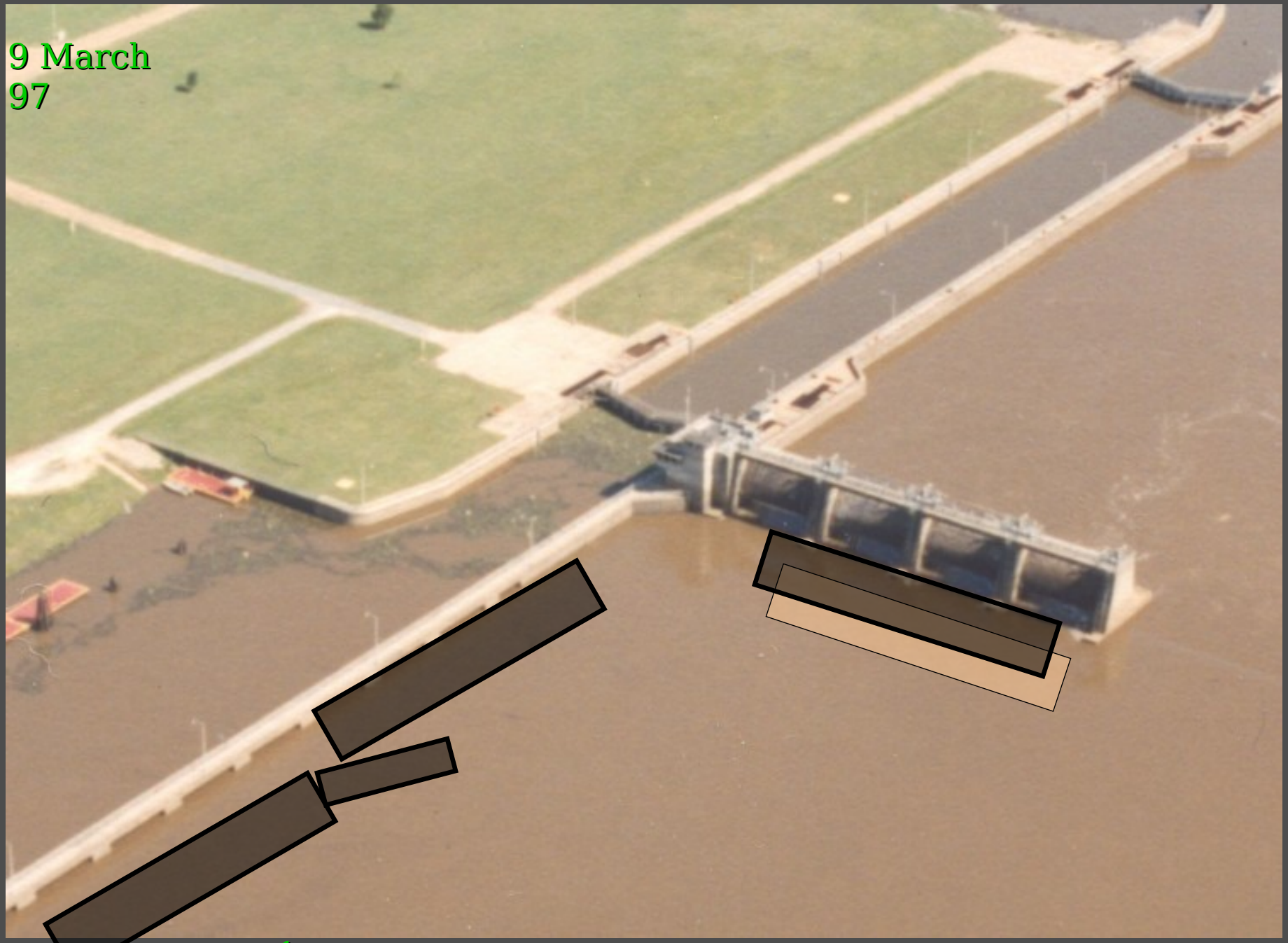


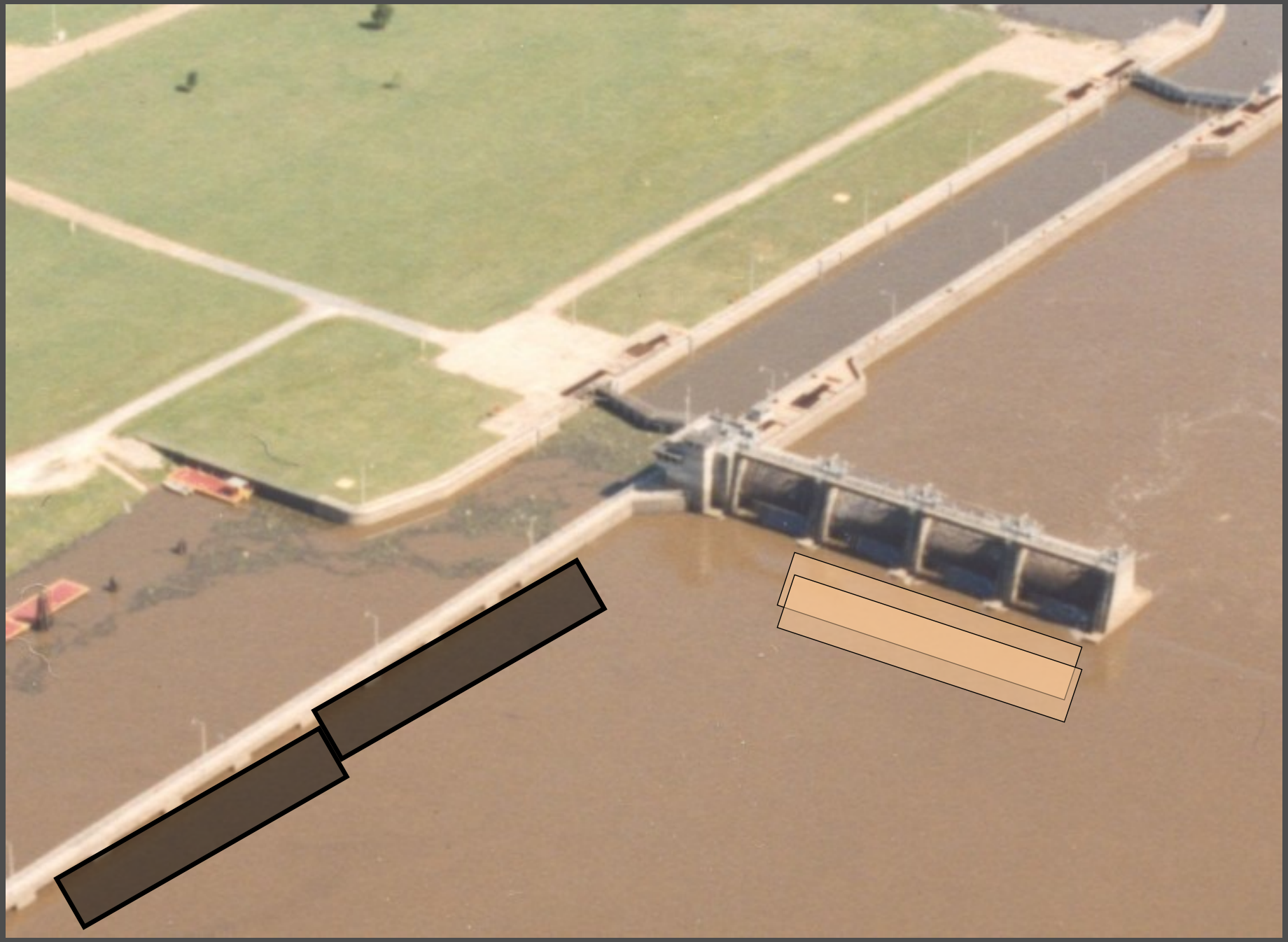


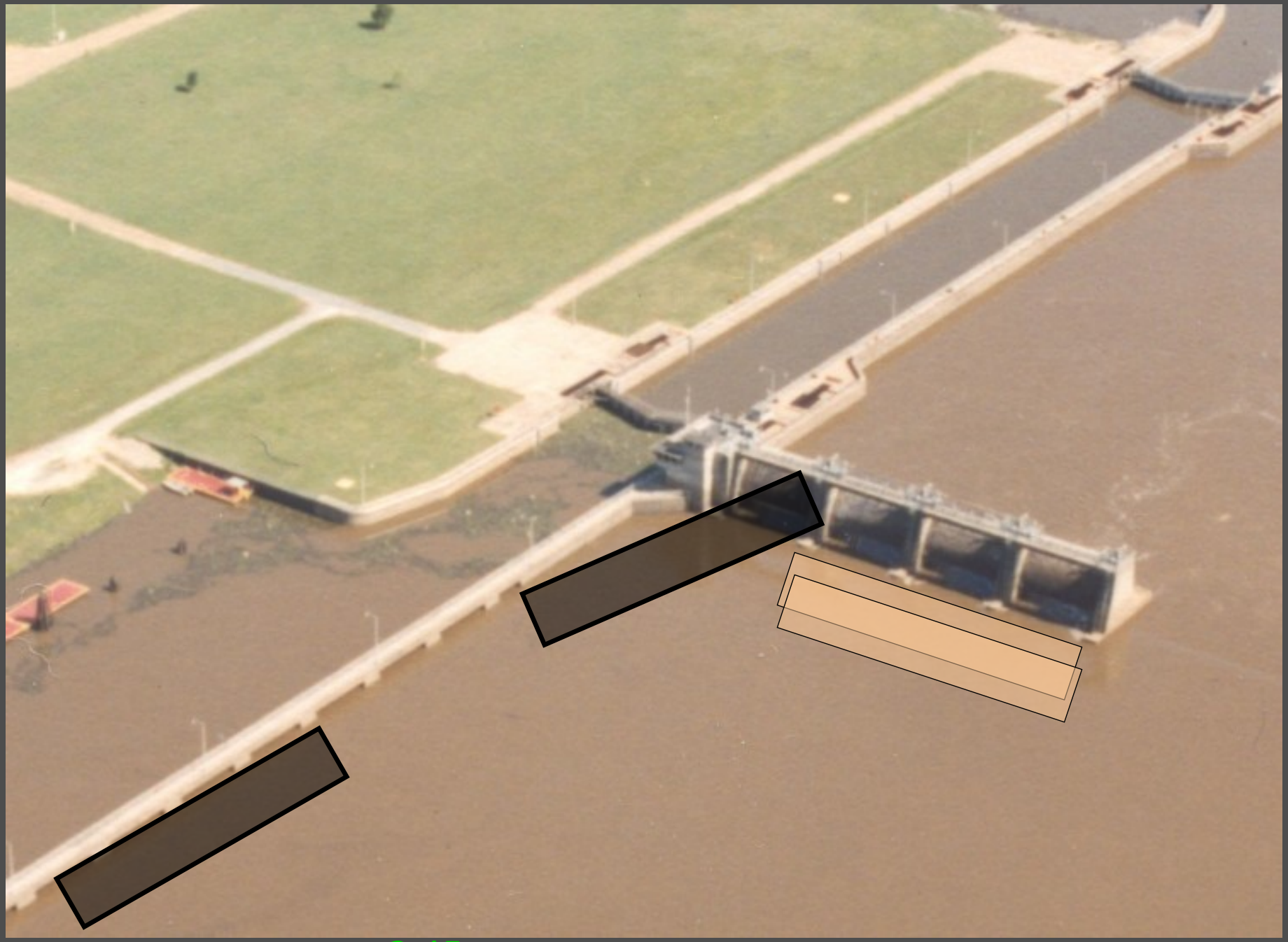




10p


9 March
97
1a





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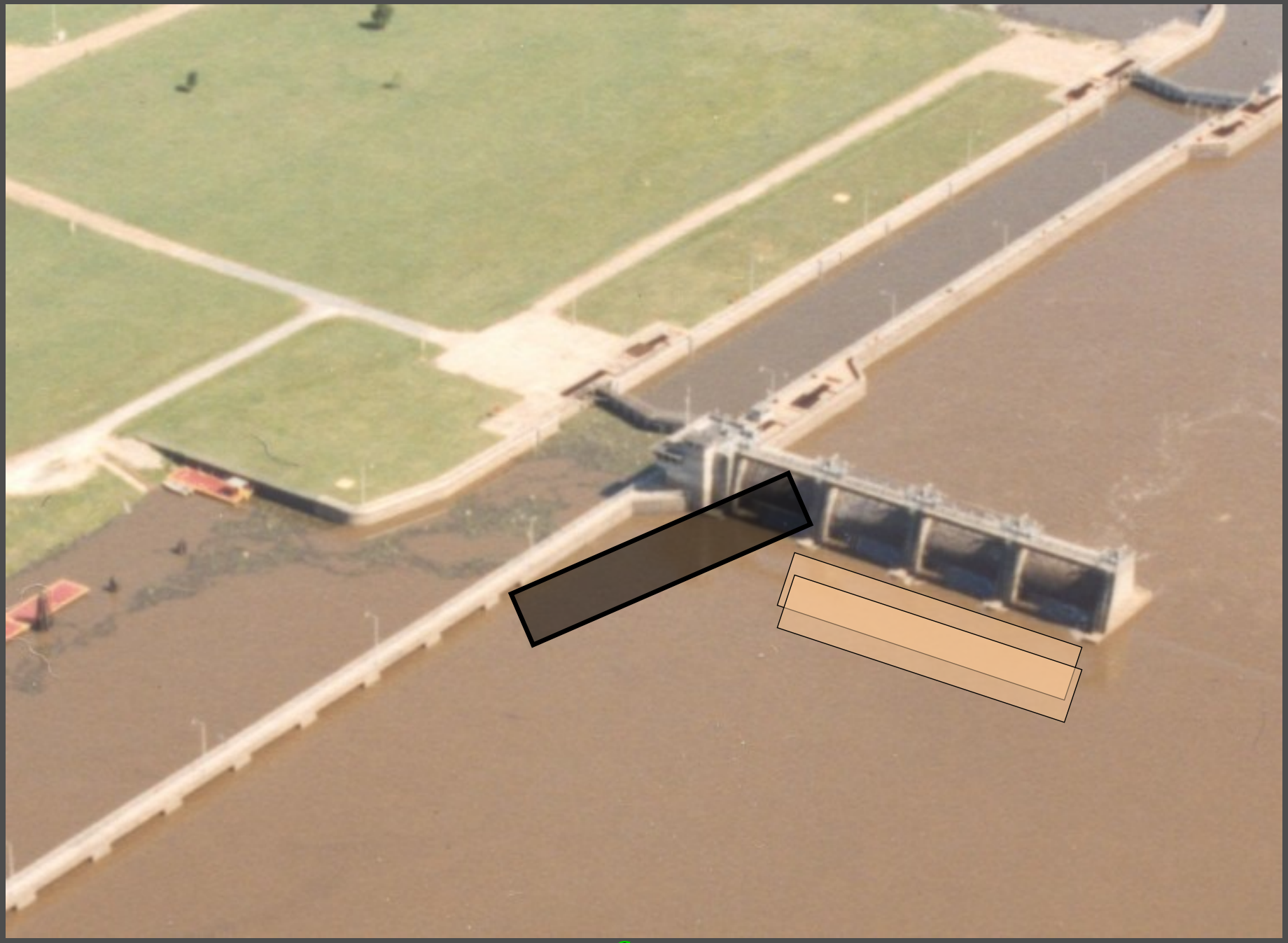


6a

10 Mar
97
COLUMBIA
LOCK

10 Mar
97

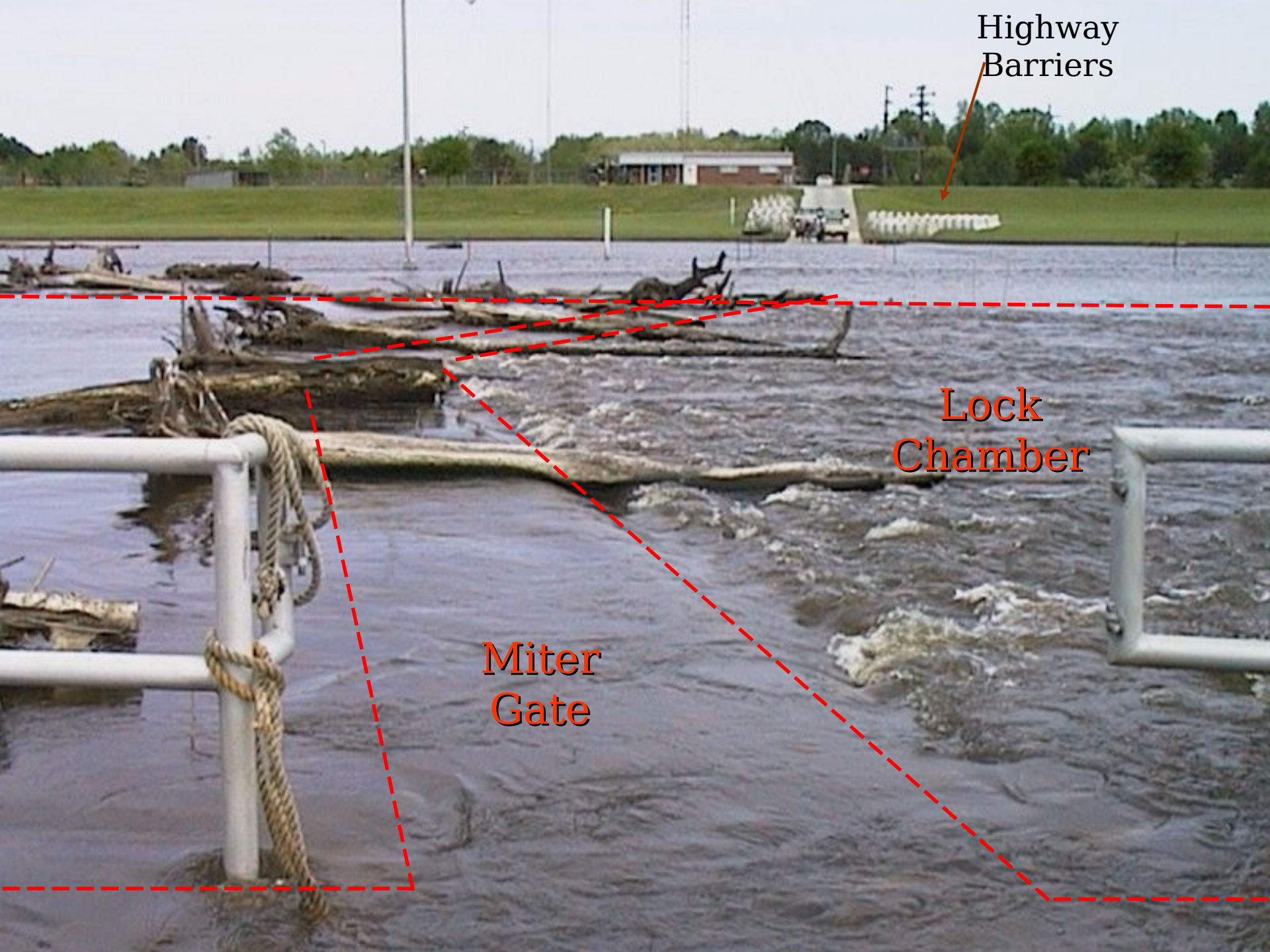
ING 713

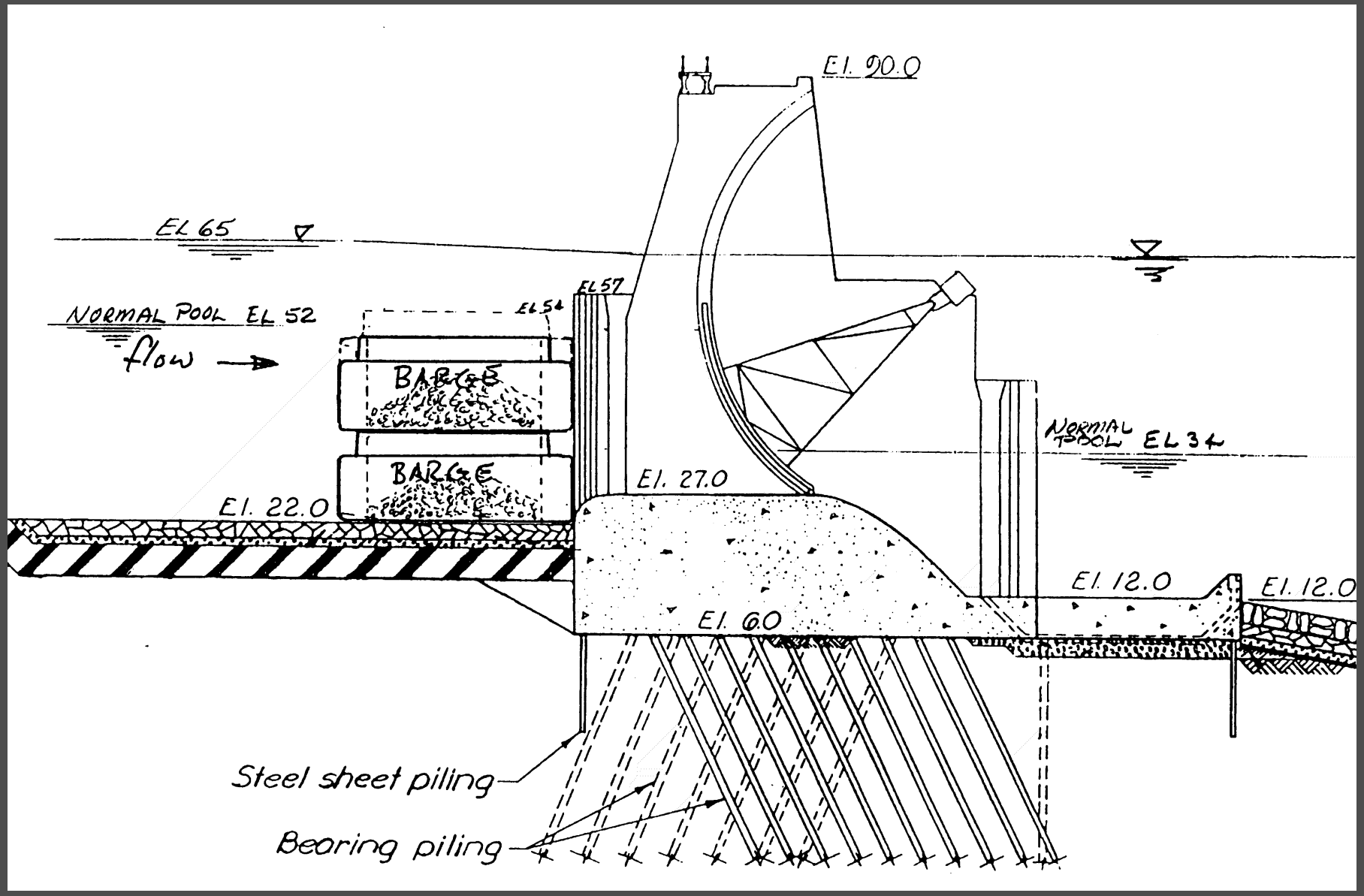
11 Mar
97

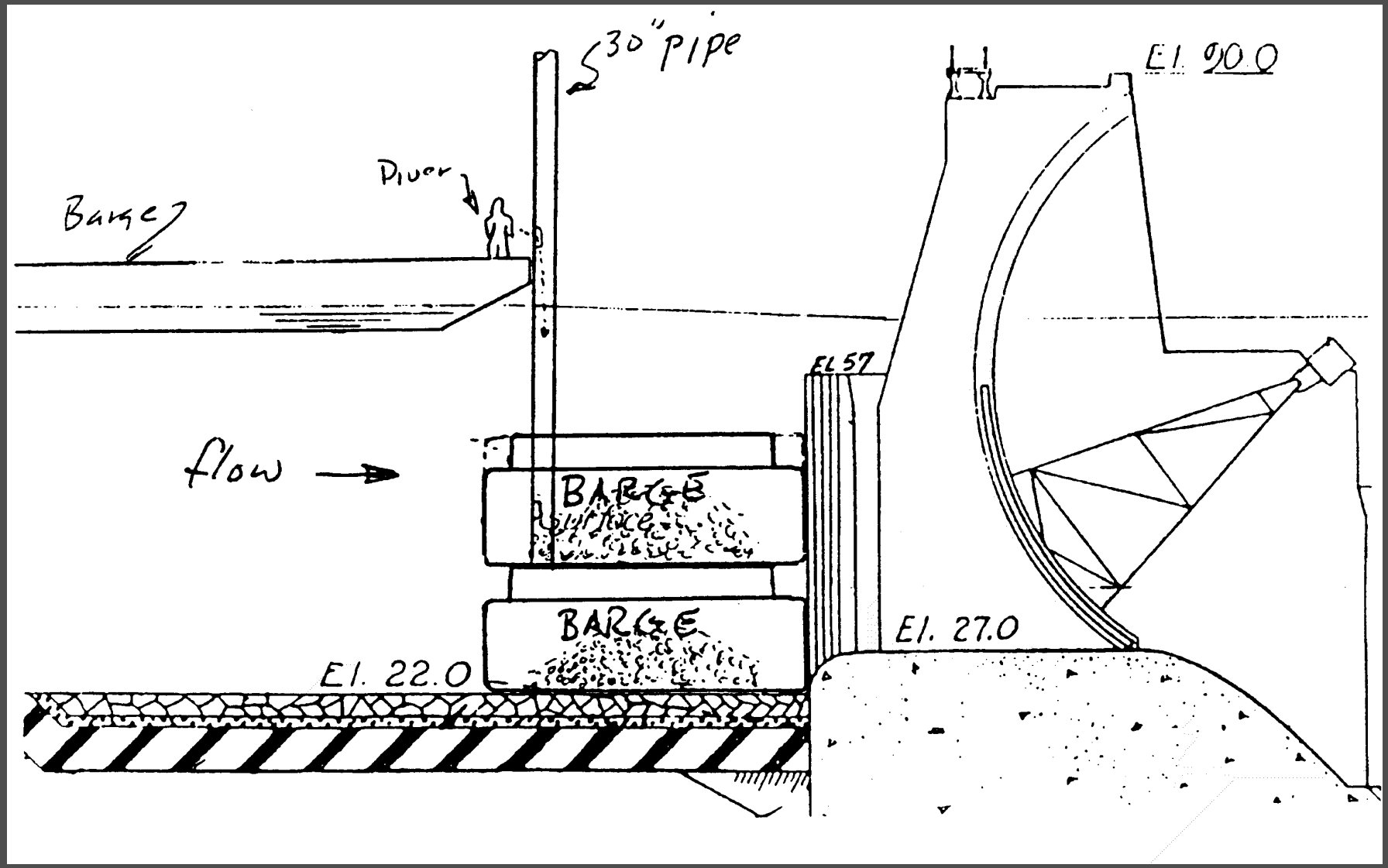
MISS TONI
IPS 713

Identifying the Problems

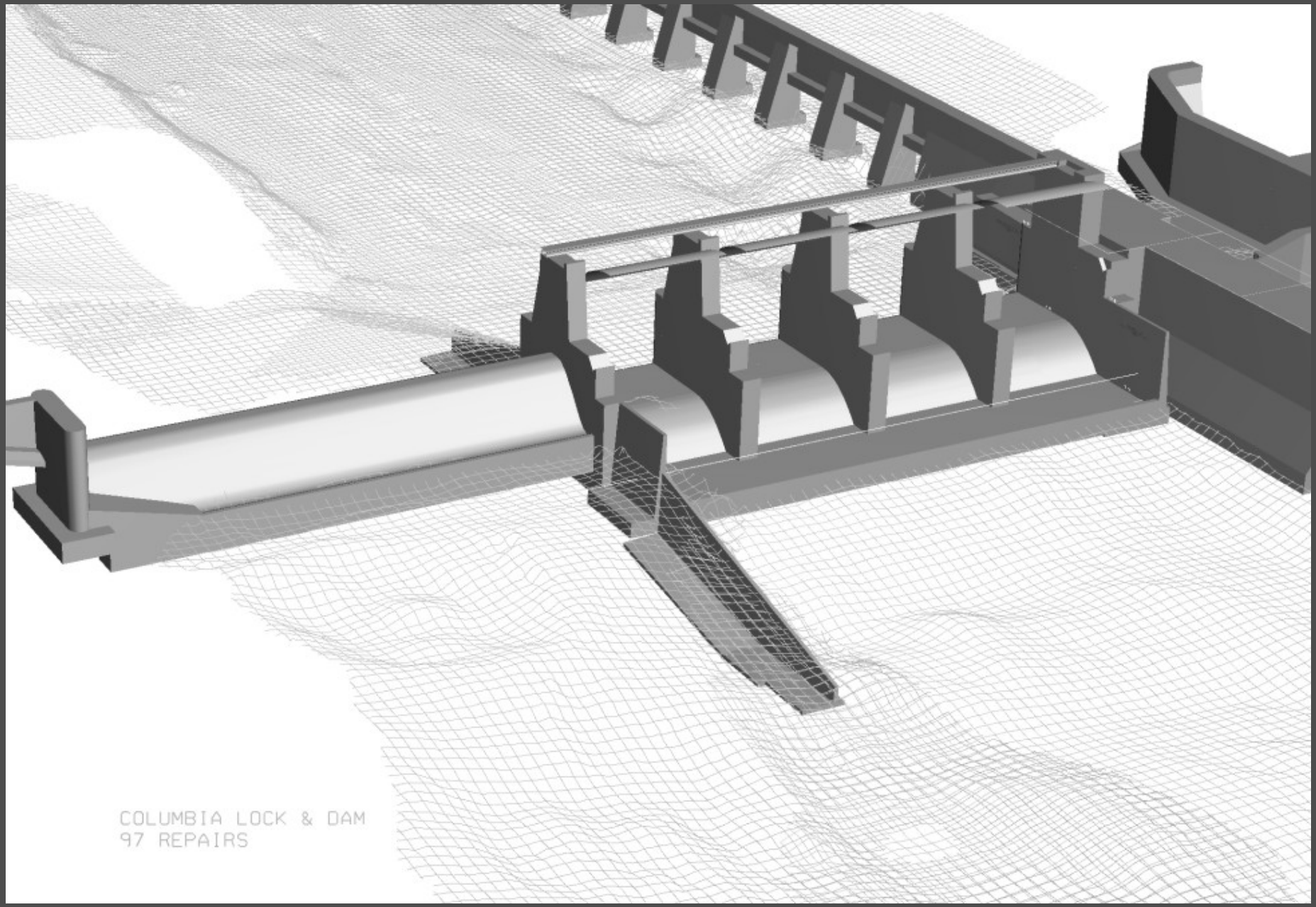
- **Remove Two Sunken Barges**
- **Damaged & Inoperable Tainter Gate**
- **Too Much Flow thru the Nav Pass**
- **The River Forecast is Bad News**
- **There is no heavy equipment upstream**


Highway
Barriers
Lock
Chamber
Miter
Gate

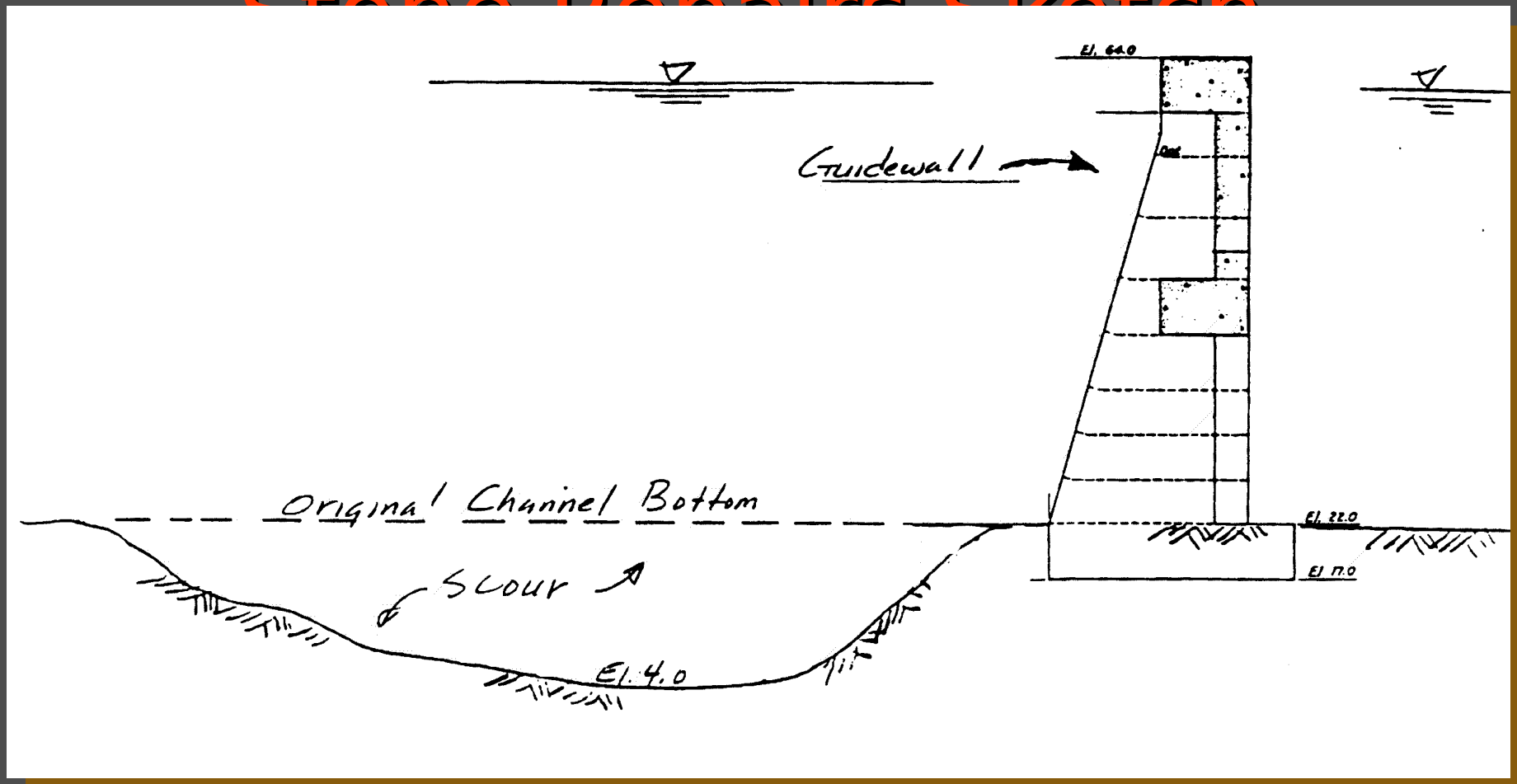

El. 90.0
EL 65
NORMAL POOL EL 52
flow
EL57
EL54
BARGE
BARGE
El. 22.0
El. 27.0
NORMAL POOL EL 34
El. 12.0
El. 12.0
El. 60
Steel sheet piling
Bearing piling

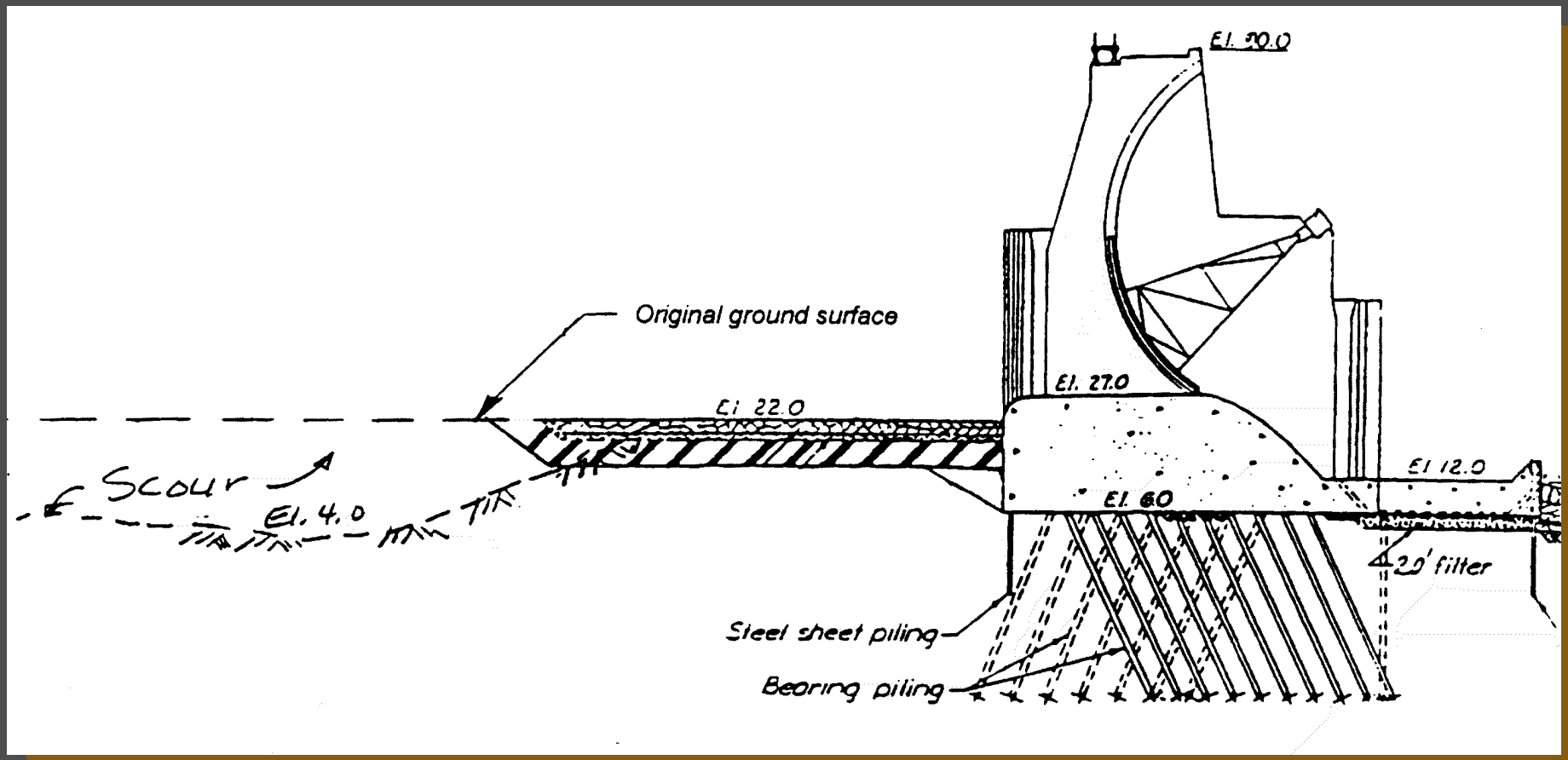

30" pipe
El 90.0
Diver
Barge
flow
EL 57
BARGE
BARGE
El. 27.0
El. 22.0

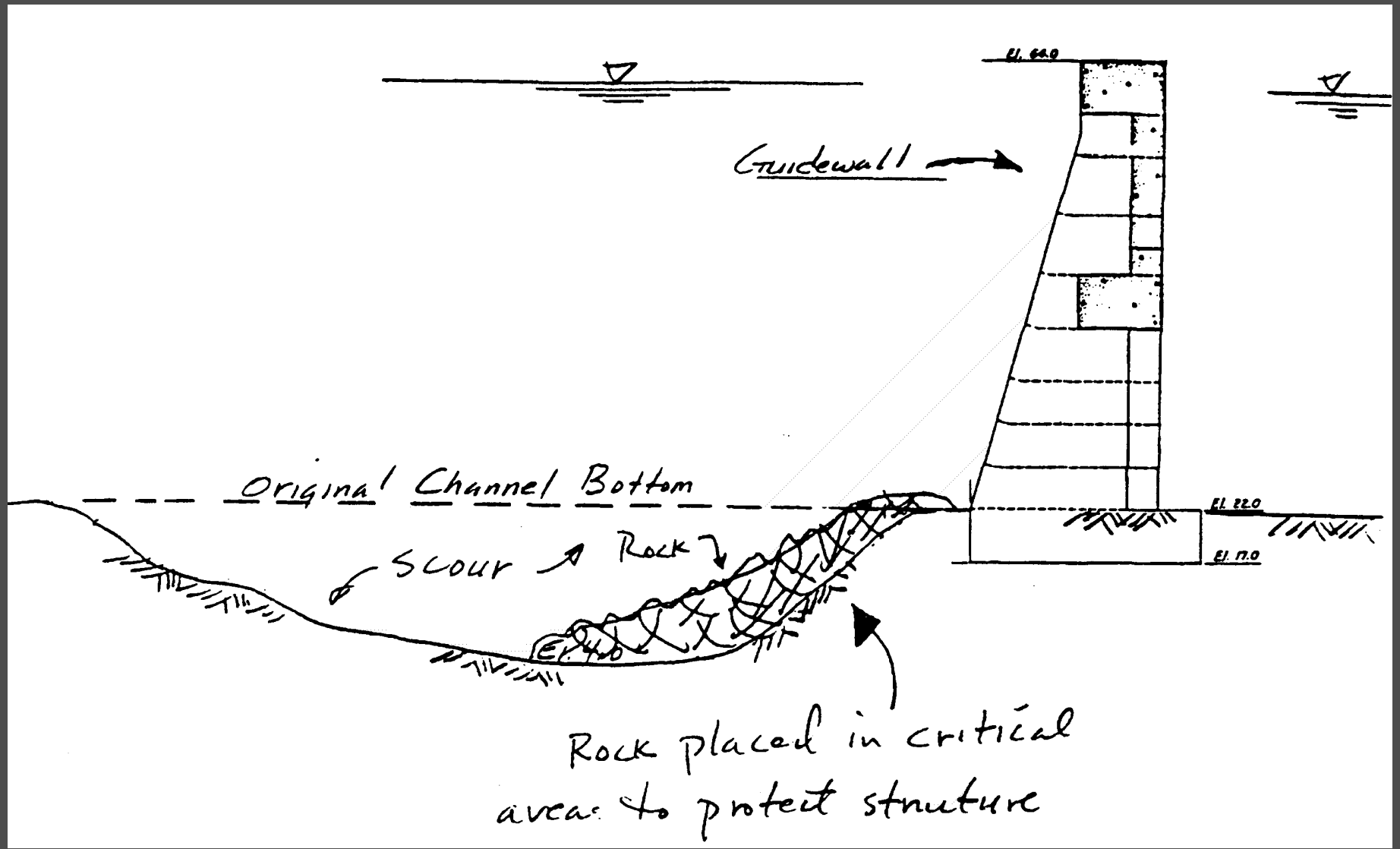
Salvage Ops

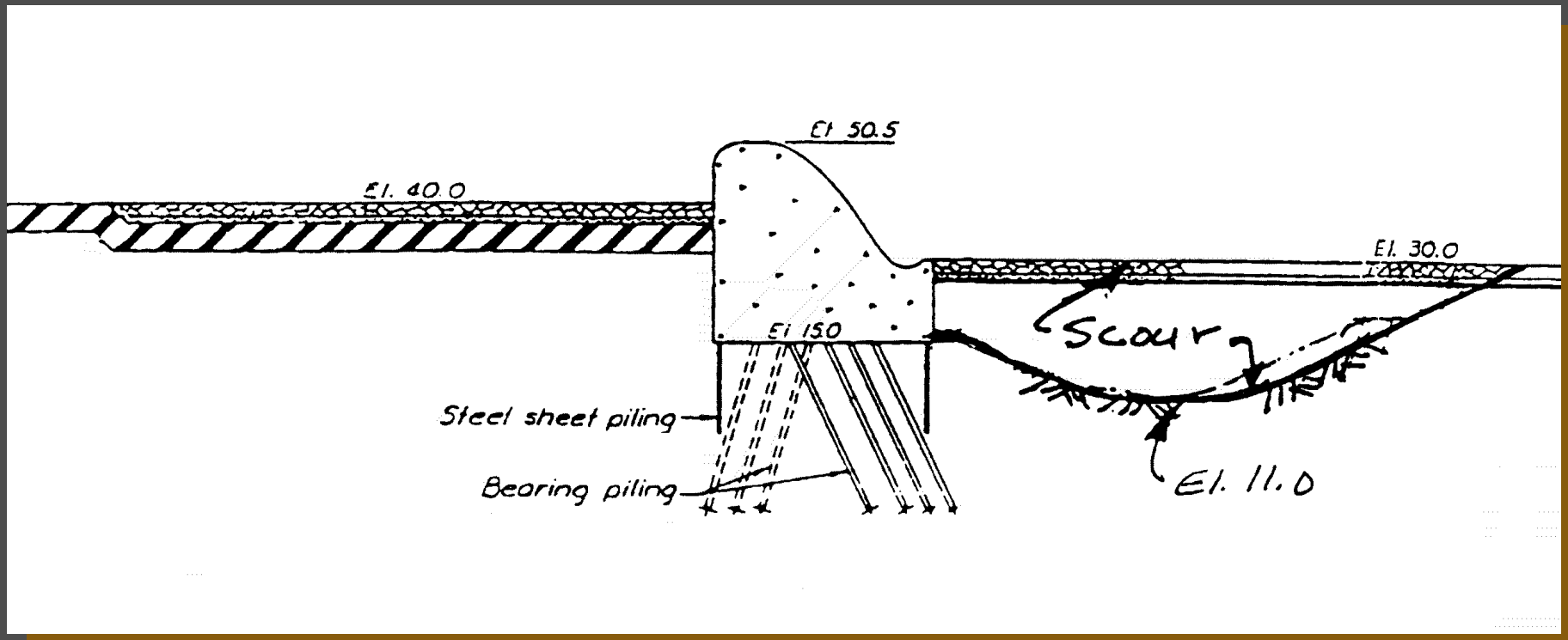

COLUMBIA LOCK & DAM
97 REPAIRS

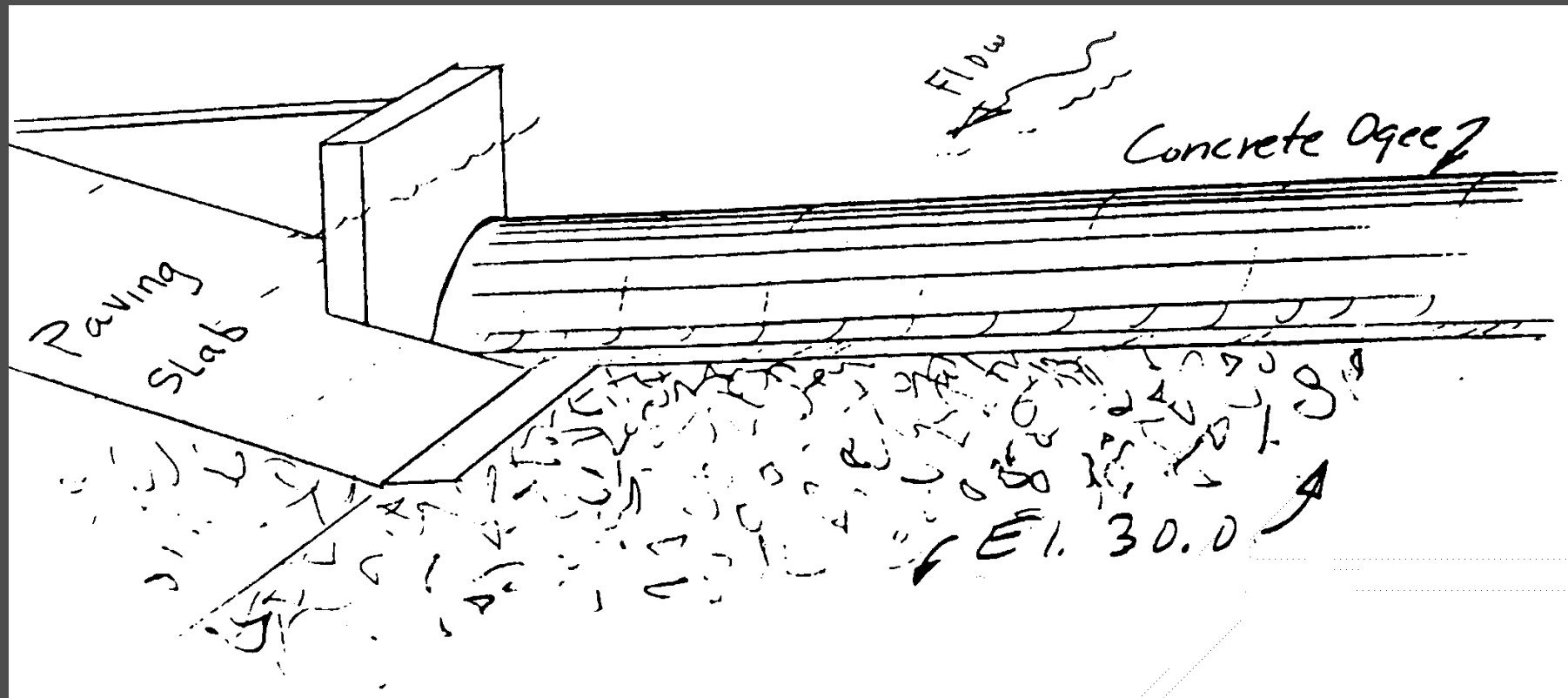
Stone Repairs Sketch



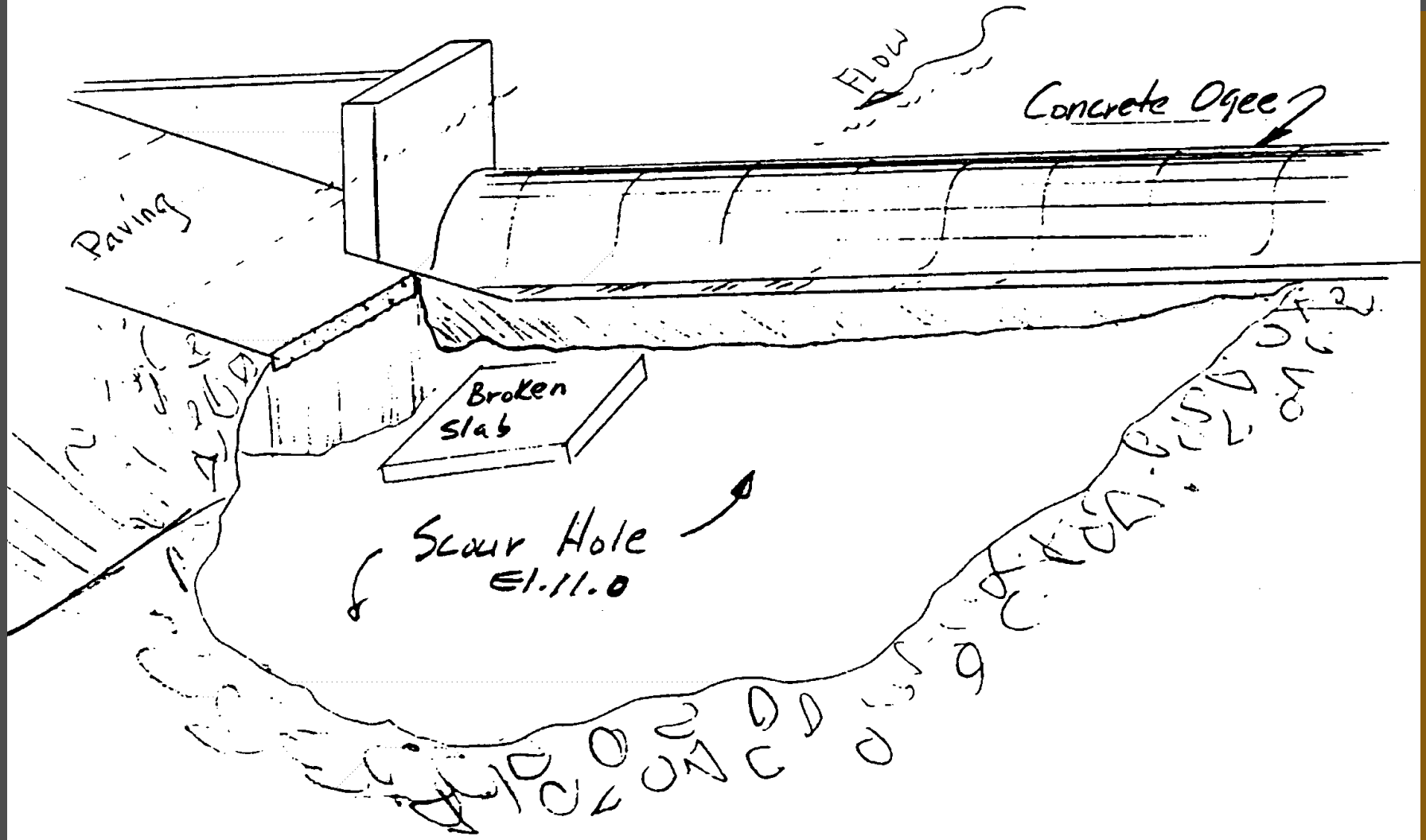

El. 30.0
Original ground surface
El. 22.0
El. 27.0
Scour
El. 4.0
El. 12.0
El. 6.0
2.0' filter
Steel sheet piling
Bearing piling


El. 64.0
Guidewall
Original Channel Bottom
El. 22.0
El. 11.0
Scour
Rock
El. 40.0
Rock placed in critical
area to protect structure


El. 50.5
El. 40.0
El. 30.0
El 15.0
Scour
Steel sheet piling
Bearing piling
El. 11.0



Downstream Navigation Pass (Looking U.S.)
Before Scour



Downstream Navigation Pass
After Scour

Gate Damage

- Trunion bolts
- Center hole jack

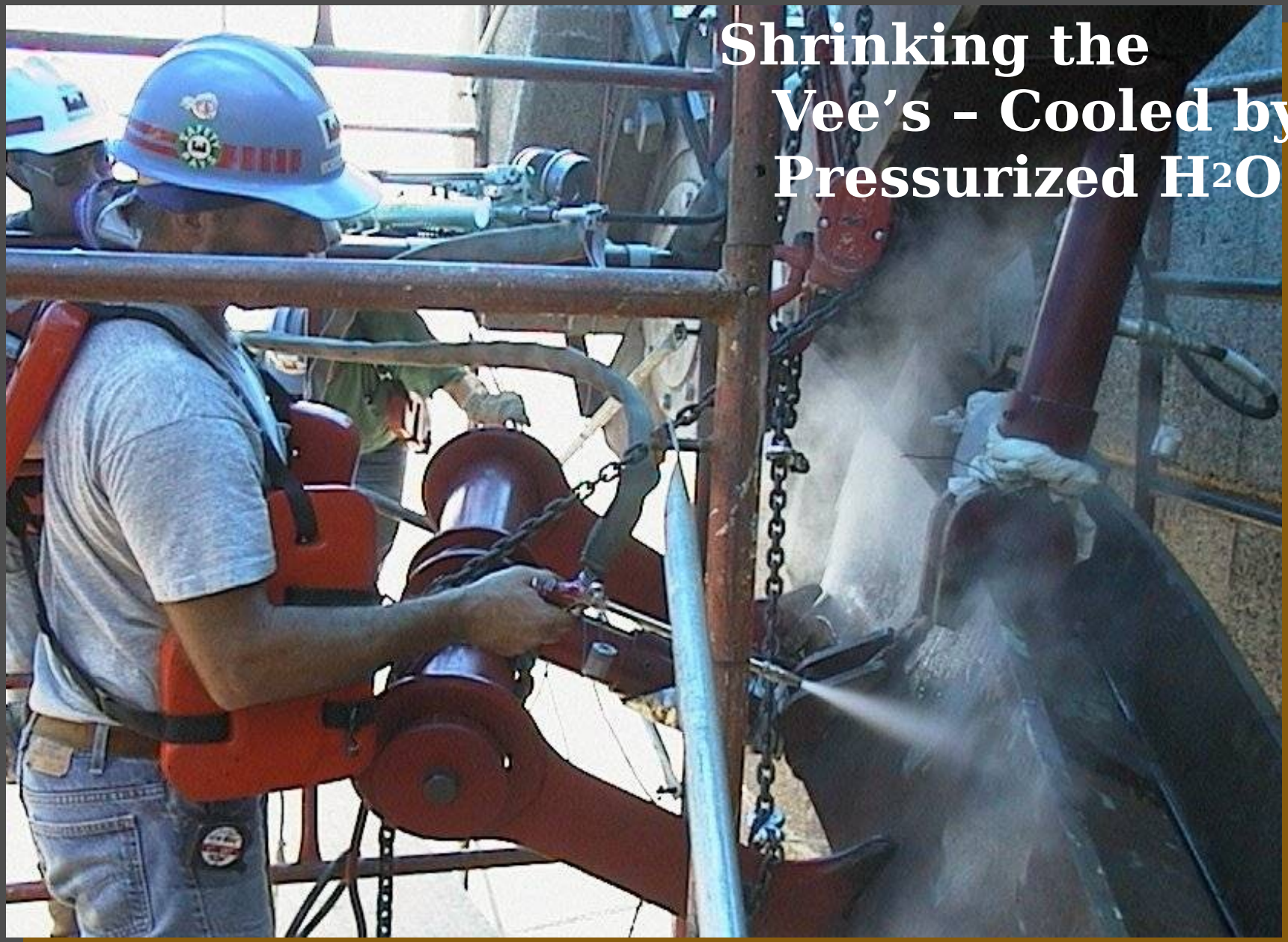
Second Barge Flips on to it's Side

8 June 97

Restraint Applied

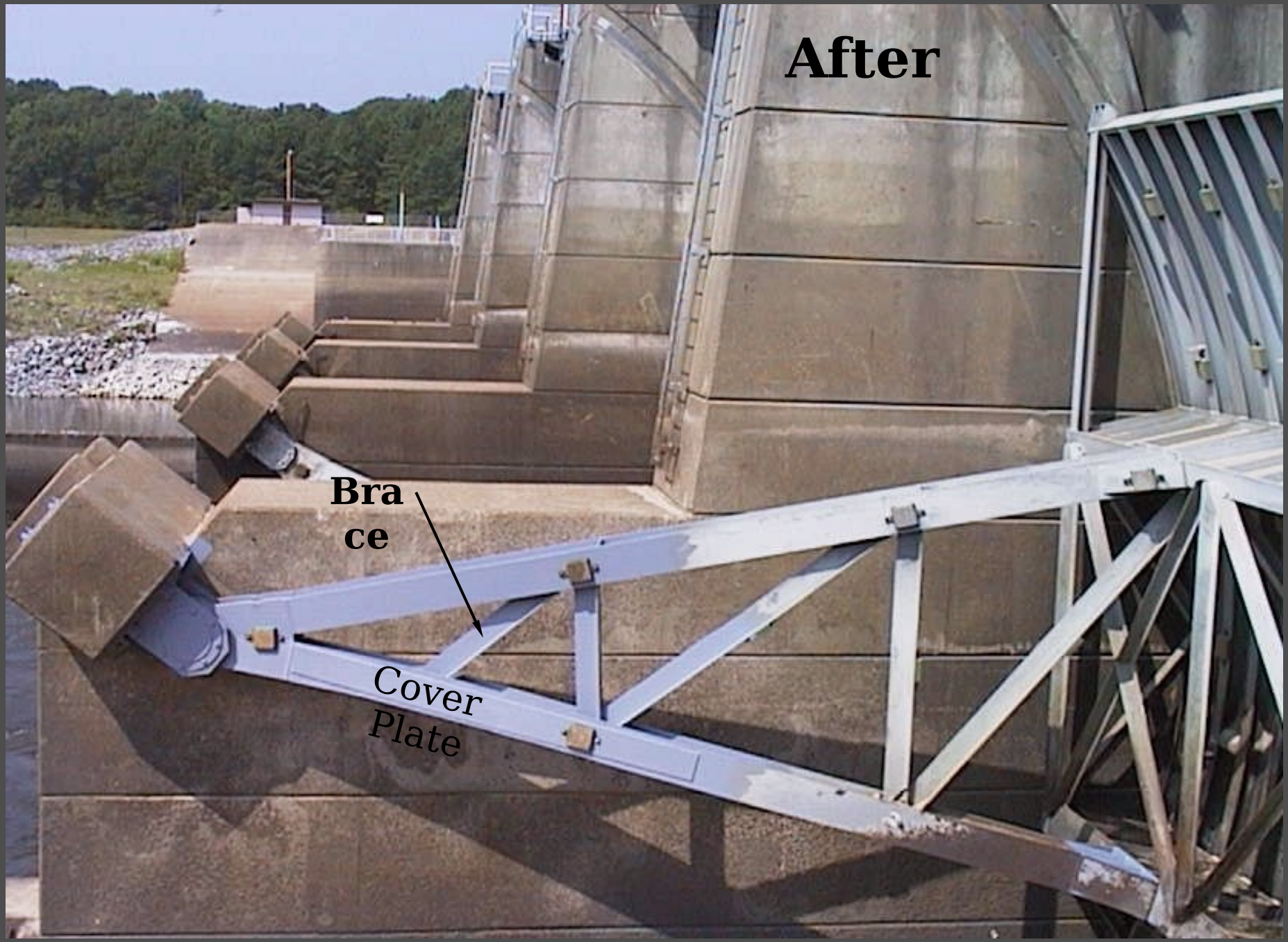
Tightening Up the Restraint

Shrinking the Vee's – Cooled by Pressurized H^2O



Jeff

Before


After
Bra
ce
Cover
Plate

Summing it up

Overall Repair Expense

$1.25m